Valuation of Intellectual Property and Intangible Assets

Gordon V. Smith

Russell L. Parr

John Wiley & Sons

New York • Chichester • Brisbane • Toronto • Singapore

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold with the understanding that the publisher is not engaged in rendering legal, accounting, or other professional service. If legal advice or other expert assistance is required, the services of a competent professional person should be sought. *From a Declaration of Principles jointly adopted by a Committee of the American Bar Association and a Committee of Publishers.*

ISBN 0-471-61200-6

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

of the accounting practices of the subject company for even this to be effective.

Tax Basis

This is the same as book value described above except that the calculation of capital recovery is in accordance with tax requirements. Capital recovery is usually calculated by some form of accelerated method, and the life is the result of some legislation rather than being based on actual service life.

Tax depreciation methods and lives have been changed so often and so significantly over the years that tax basis is of no use as a measure of any form of value.

VALUATION TECHNIQUES

Remembering that value can be defined as the present value of future benefits to be derived by the owner of property, a valuation needs only to *quantify* the future benefits and then *calculate* their present value. These future benefits may be in the form of income, as in the case of a security or investment real estate or intellectual property licensed to others; in the form of service, such as the production of goods by process equipment or manufacturing machinery; in the form of use, such as mineral reserves or residential occupancy; or in the form of enjoyment, as in the case of fine arts or jewelry.

For property dedicated to a business enterprise, future benefits are preferably measured in terms of income. There are, however, instances in which we rely upon an alternative measurement of future service, as discussed next.

We include in this discussion of valuation methodologies an explanation of appraisal depreciation as it pertains to value. In a previous section, we have pointed out the distinction between

appraisal depreciation and capital recovery used in accounting. It is very difficult to separate depreciation from valuation, since any attempt to measure future benefits of property ownership carries with it the necessity to quantify how long those benefits are going to last and how much time must pass before they are to be realized. In addition, one must consider how those benefits will be received. For example, will they be great in the early years and then diminish (or vice versa), or will they be equal each year?

Writers about the appraisal process often present the subject as if the calculation of value can be made as one step with depreciation to follow. These steps in fact are not separable, and they must be considered together.

There are three accepted valuation methodologies: cost, income, and market techniques. One can find other methods presented in texts, but some analyses will reveal that other methods are really forms of these three.

Cost Approach

The cost approach seeks to measure the future benefits of ownership by quantifying the amount of money that would be required to replace the future service capability of the subject property. This was defined above as cost of replacement. The assumption underlying this approach is that the *price* of new property is commensurate with the economic value of the service that the property can provide during its life. The marketplace is the test of this equation. If, for example, the price of a new machine were set at a level far above the present value of the future economic benefits of owning the machine, then none would be sold. If the opposite were true, then demand would outstrip supply, and presumably the price would rise. The price of a new machine, absent some market aberration, is therefore equal to its fair market value.

Depreciation

One is rarely called upon to
new property, however, and
nearly always brings with i
reduction from (brand-new
tion. Appraisal depreciation
functional obsolescence, an
reflection of all three is ess
approach. These factors are

Income Approach

The income approach step:
creating a new property a
income-producing capabil
ory is that the value of pr
worth of the net economic
to be received over the lif
described by Campbell an

> It has often been stat
> (whether bricks and
> rate shares) are only
> can earn, and the t
> earnings when relat
> ness situation.[6]

In the following dis
familiar with the "time
dollar to be received in t
to be received immediat
refer to the current valu

[6] Ian R., Campbell, and Jol
Canadian Chartered Accour

Depreciation

One is rarely called upon to render an opinion of value on brand-new property, however, and the use of the cost approach therefore nearly always brings with it the complexity of quantifying the reduction from (brand-new) value due to the action of depreciation. Appraisal depreciation is the result of physical deterioration, functional obsolescence, and economic obsolescence. The proper reflection of all three is essential to estimating value by the cost approach. These factors are discussed in detail in Chapter 8.

Income Approach

The income approach steps away from the cost of constructing or creating a new property and focuses on a consideration of the income-producing capability of the property. The underlying theory is that the value of property can be measured by the present worth of the net economic benefit (cash receipts less cash outlays) to be received over the life of the property. This concept is nicely described by Campbell and Taylor:

> It has often been stated, but bears repeating, that assets (whether bricks and mortar, land, equipment, or corporate shares) are only worth in the open market what they can earn, and the true measure of worth is the assets' earnings when related to the risk inherent in the business situation.[6]

In the following discussion, we will assume that the reader is familiar with the "time value of money" and the concept that a dollar to be received in the future is worth less today than a dollar to be received immediately. We will use the term present worth to refer to the current value of money to be received in the future,

[6] Ian R., Campbell, and John D. Taylor, "Valuation of Elusive Intangibles," *Canadian Chartered Accountant*, May 1972, p. 41.

and the term discount rate to mean the interest factor used in the present worth calculation. The term capitalization rate will be used when the process involves a perpetual income stream.

The three essential ingredients of the income approach are:

1. The amount of the income stream that can be generated by the property
2. An assumption as to the duration of the income stream
3. An assumption as to the risk associated with the realization of the forecasted income

These elements can be related to one another by means of a simple formula, $V = I/r$, where:

V = Value of the earnings stream attributable to the property
I = Income derived from employment of the property, representing the net of cash inflows and outflows
r = Capitalization rate reflecting all the business, economic, and regulatory conditions affecting the risk associated with employing the property and achieving the prospective earnings

For example, if an income of $100 will be received in perpetuity, and the appropriate rate of capitalization is 10 percent, then the value of that income is:

$$\frac{\$100}{.10} = \$1000$$

This is obviously the simplest of examples and one that never occurs in real life. Property ownership is rarely expected to produce income perpetually. Therefore, the calculation is always more complex, and the determination of an appropriate capitalization rate is more complex as well. Because business property is owned for the express purpose of earning a return on investment, the income approach is the strongest indicator of value for this type of property.

There are a number
in the estimation of the
from the ownership of
discount rate (risk factor
ter 9 and in Appendix A
one may be again relyin
depreciation. That is, th
may be subject to both
The income that they a
portionately, and this d
tion by the income appr

The income appro
following:

1. Contracts
2. Licenses and r
3. Patents, traden
4. Franchises
5. Securities
6. Business enter

The income appr
and without intermed
of appraisal depreciati

Market Approach

The market approach
stood appraisal techn
benefits by obtaining
place have judged it t
public market and (2)

There are a number of methods that the analyst has to assist in the estimation of the amount of income that can be realized from the ownership of an asset and to estimate an appropriate discount rate (risk factor). These are discussed at length in Chapter 9 and in Appendix A. As to the expected *duration* of income, one may be again relying on a consideration of the three forms of depreciation. That is, the assets that are the source of the income may be subject to both a decline in value and in earning power. The income that they are capable of producing may decline proportionately, and this decline would become part of the calculation by the income approach.

The income approach is best suited for the appraisal of the following:

1. Contracts
2. Licenses and royalty agreements
3. Patents, trademarks, and copyrights
4. Franchises
5. Securities
6. Business enterprises

The income approach indicates fair market value directly and without intermediate calculations involving the three forms of appraisal depreciation.

Market Approach

The market approach is the most direct and the most easily understood appraisal technique. It measures the present value of future benefits by obtaining a consensus of what others in the marketplace have judged it to be. There are two requisites: (1) an active, public market and (2) an exchange of comparable properties.

The residential real estate market is a good example of where these conditions are usually present. There is usually some activity in this market in a given area, and selling, asking, and exchange prices are public. Of course not all residential properties are similar, but given enough activity, reasonable comparisons can be made.

Where these optimal market conditions do not exist, using this approach involves more judgment, and it may become a less reliable measure of value. As we will discuss in Chapter 7, this technique is rarely used for the valuation of intangible assets and intellectual property largely because of the absence of the conditions noted below.

Active Market

The ideal situation is to have a number of property exchanges to use in this analysis. One sale does not make a market. There are, for example, publicly-traded common stocks in which only a few shares are traded in a year. Their exchange price has much less validity as a measure of their value than, for instance, General Motors stock, in which thousands of shares are traded each day. All the other requisites except activity are there.

Public Market

To be useful, the exchange consideration must be known or discoverable. The prices of common stock in the primary exchanges are known in minute detail. For other types of property, it becomes more and more difficult to discover the exchange price. Even with real estate, the published price may be misleading due to financing arrangements between buyer and seller that are not made public. Transactions between businesses, such as the sale of a plant, product line, or subsidiary may be very difficult or impossible to evaluate because competitive pressure motivates the participants to keep the details confidential.

Adjustments for Comparabil

The best of all worlds for a
property, an arm's-length sal
the street, the day before th
not happen with enough reg
adjustments when the "com
parable. Real estate appraise
lem of quantifying differen
amenities, zoning, size, sh
sales can be equated to the
of value. Analysts using this
have the same challenge,
obvious—one either has it

Adjustments for Time

Sometimes it is necessary
contemporaneous with the
must adjust for price chan
a separate study of change
during a recent period of
indices to use in the adjust

Summary

With this background, t
strengths and weaknesses
a good base of informatio
similar to the subject, the
indicator of value. As the
information about them
bility makes adjustment s
be useful. The market ap

1. Real estate
2. Machinery and e